Preliminary Science Flight Report
Operation IceBridge Antarctica 2011

Flight: **F13**
Mission: **Slessor Glacier and Bailey Ice Stream Grounding Line 1**

Flight Report Summary

Aircraft	**DC-8 (N817NA)**
Flight Number	120117
Flight Request	128008
Date	Sunday, October 30, 2011 (Z), Day of Year 303
Purpose of Flight	Operation IceBridge Mission Slessor Glacier Grounding Line 1
Take off time	12:12:39 Zulu from Punta Arenas (SCCI)
Landing time	23:48:48 Zulu at Punta Arenas (SCCI)
Flight Hours	11.7 hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of a grid over the Slessor Glacier and Bailey Ice Stream grounding line area. Completed entire mission as planned. • Added a low altitude cross line at beginning of the survey. • Collected 15 minutes of high altitude (37,000 ft) ATM and DMS data over southern Weddell Sea for sea ice before clouds obscured surface. • ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines. • Conducted one ramp pass (1500 ft AGL) at Punta Arenas airport for ATM and snow and Ku-band radar instrument calibration before landing.
Geographic Keywords	Slessor Glacier, Bailey Ice Stream, Shackleton Range, Antarctica
ICESat Tracks	None.
Repeat Mission	None.

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	34 GB	None
MCoRDS	☒	☒	☒	1.4 TB	None
Snow Radar	☒	☒	☒	180 GB	None
Ku-band Radar	☑	☒	☒	180 GB	None
DMS	☑	☒	☑	57.5 GB	None
Gravimeter	☑	☑	☑	180 GB	None
DC-8 Onboard Data	☑	☑	☑	40 MB	None

Mission Report (Michael Studinger, Mission Scientist)

Today's mission is a new design. The intention is to map the grounding line area of Slessor Glacier and Bailey Ice Stream using all IceBridge low-altitude sensors. The grid lines are spaced 10 km apart. We also added a low altitude cross line at the beginning of the survey for cross-over estimates.

The weather forecast continued to show poor conditions over all remaining target sites, with the exception of the Slessor Glacier area. Most of the transit from the Antarctic Peninsula over the Weddell Sea was clouded in as expected, except for a small hole that was predicted by the AMPS model. The edge of the GFS model predicted a low-altitude cloud bank moving into the survey area by the time we finished the survey, which was a concern. We did not see any clouds north of the survey area when we left. We encountered perfect conditions over the survey area and recorded an additional 15 minutes of high altitude ATM and DMS sea ice data over the southern Weddell Sea before clouds obscured the surface.

Known wildlife colonies in the survey area were at safe distance to the flight path of the DC-8.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM lasers worked well and collected good data along the entire survey line.

MCoRDS: The MCoRDS worked well.

Snow and Ku-band radar: The snow and Ku-band radars collected data along the entire line.

Gravimeter: Worked well. Issues with data space were resolved during flight.

DMS: DMS worked well. No issues.

DC-8 on board data: System worked well.

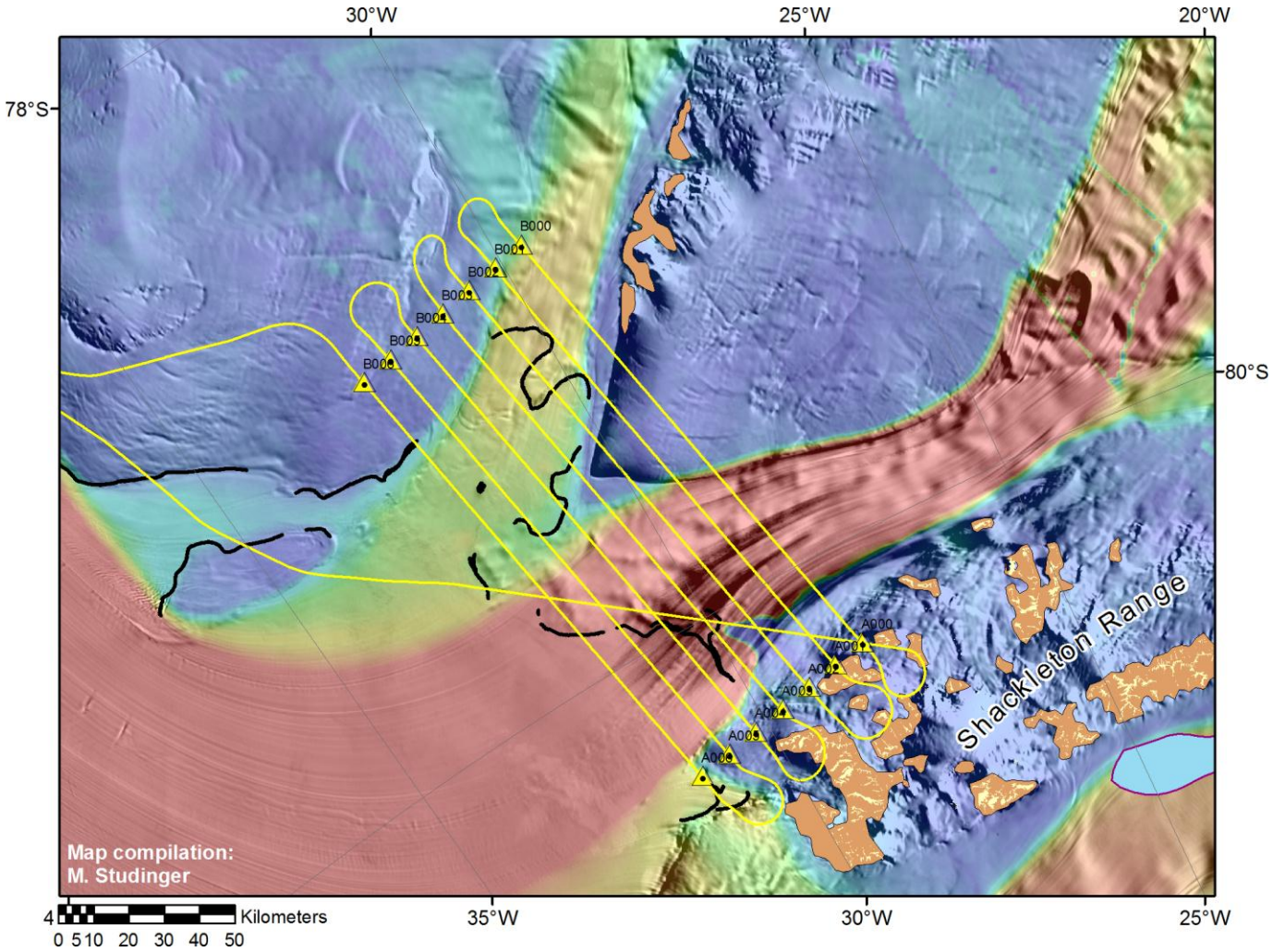

Figure 1: DC-8 trajectory over the Slessor Glacier and Bailey Ice Stream grounding line area. Subglacial lakes are indicated by blue outlines. Background image is MODIS mosaic and ice surface velocity from InSAR. Black line is grounding line.